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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/549,853

09/23/2005

Robert H Kirkby

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09/02/2008

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EXAMINER

YAARY, MICHAEL D

ART UNIT

PAPER NUMBER

2193

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/549,853	Applicant(s) KIRKBY, ROBERT H	
	Examiner MICHAEL YAARY	Art Unit 2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/03/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-10 are pending in the application.

Claim Objections

2. Claim 7 is objected to because of the following informalities: The claim is missing an ending period. Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

(i) Claim 1 is directed to a method that merely performs calculations and manipulation of data. In order for such a claimed invention to be statutory, the claimed invention must accomplish a practical application. That is the claimed invention must transform an article or physical object to a different state or thing, or produce a useful, concrete, and, and tangible result; see *State Street 47*, USPQ2d. It is clear from independent claims 1 that the claimed invention merely involves calculations and manipulations of data in that of obtaining the product of two transforms. The result produced by the invention, as recited in the claims, does not have a real world value but

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merely an output without a recited practical application that makes the result useful, concrete, and tangible. Therefore, independent claim 1 is directed to non-statutory subject matter as the claimed invention fails to accomplish a practical application.

(ii) Claims 2-10 are rejected for similar reasons as discussed for their respective parent claim, as they fail to present any limitations that resolve the deficiencies of the claim from which they depend.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Budisin (Efficient Pulse Compressor for Golay Complementary Sequences, Pages 219-220).

7. Budisin was cited in the IDS filed 05/03/2006.

8. **As to claim 1**, Budisin discloses a method of matched filtering (Page 220, paragraph 1) comprising:

Computing the Fourier transform of a signal to be filtered (Page 220, paragraph 5, lines 1-10);

Computing the Fourier transform of a reference sequence to which the filter is to be matched (Page 220, paragraph 2, lines 1-10);

Forming the product of the two transforms (Page 220, paragraph 2, lines 1-10 and figure 1);

Characterized in that the reference sequence is defined by a process of iteratively combining shifted versions of shorter sequences and the step of computing the Fourier transform of the reference sequence comprises an iterative process of combining the Fourier transforms of a shorter starting sequence (Page 220, paragraphs 1-3).

9. **As to claim 2**, Budisin discloses the reference sequence is a Golay sequence pair (Page 220, paragraph 3) and the step of forming the Fourier transform of the reference sequence comprises repeatedly:

Combining the Fourier transform of a first member of a Golay pair with the Fourier transform of the second member of that Golay pair to produce a first member of a new Golay pair; and combining the Fourier transform of a first member of a Golay pair with the Fourier transform of the second member of that Golay pair to produce a second member of a new Golay pair (Page 220, paragraphs 2-3).

10. **As to claims 3 and 7**, Budisin discloses combining uses only the operations of inverting, addition, and multiplication by $\exp(+j2\pi f\Phi)$, where f is frequency and Φ is a shift value dependent on the length of the sequence (Page 220, paragraph 3).

11. **As to claims 4, 5, 8, and 9**, Budisin discloses the transforms $A_k(f)$, $B_k(f)$ of the Golay pair are formed from the transforms $A_{k-1}(f)$, $B_{k-1}(f)$ of a shorter such pair according to the relationships

$$A_k(f) := A_{k-1}(f)\exp(+j2\pi f\Phi) + B_{k-1}(f)\exp(-j2\pi f\Phi)$$

$$B_k(f) := A_{k-1}(f)\exp(-j2\pi f\Phi) + B_{k-1}(f)\exp(+j2\pi f\Phi)$$

Where Φ is half the length of each member of the shorter pair, and f is the frequency (Page 219, all column 2).

12. **As to claim 6**, Budisin discloses the iteration commences with a Golay pair each member of which has length of 1 (Page 219, all column 2).

13. **As to claim 10**, Budisin discloses forming the inverse Fourier transform of the product (Page 220, paragraph 5).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Pat. 6,330,292 – Reduced power matched filter

Martinson, L; "Digital matched filtering with pipelined floating point fast Fourier transforms (FFT's); Acoustics, Speech and Signal Processing, IEEE

Transactions on; Volume 23; April 1975 Pages 222-234.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL YAARY whose telephone number is (571)270-1249. The examiner can normally be reached on Monday-Friday, 8:00 a.m - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lewis Bullock can be reached on (571) 272-3759. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. Y./
Examiner, Art Unit 2193

/Lewis A. Bullock, Jr./
Supervisory Patent Examiner, Art Unit 2193